

Application No.: 10/802341

Docket No.: UC0361USNA

### **REMARKS**

#### ***Status of the Application***

Claims 20-28 and 30-33 are pending in the application. Claims 1-19 are withdrawn as being directed to non-elected inventions. Claim 29 is canceled. Claims 32 and 33 are added.

Claim 20 is rewritten to be in independent form and is amended to indicate that a catalyst is present. Support for this can be found at page 12, lines 1-6, and in originally filed Claim 22.

Claim 22 is amended to delete "catalyst", as it is now recited in Claim 20.

Claims 25 and 26 are amended for clarification.

Claims 30 and 31 are amended to clarify the dependency.

Claims 32 and 33 are added to recite that the colloid-forming polymeric acid is a fluorinated polymeric acid (Claim 32) and that the acid is a sulfonic acid (Claim 33). Support for this can be found throughout the specification, for example, at page 7, lines 17-22.

No new matter is introduced in any of these amendments.

The pending claims are provisionally rejected under nonstatutory obviousness-type double patenting as being unpatentable over a co-pending application. The pending claims also stand rejected under 35 U.S.C. § 112, and under 35 U.S.C. § 102 or, in the alternative, under 35 U.S.C. § 103.

#### ***Claim Rejections – 35 U.S.C. § 112***

Claims 25-26 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants respectfully submit that this rejection has been overcome by the amendments to the claims.

The Examiner also advised that Claim 29 would be objected to as being a substantial duplicate of Claim 28. Claim 29 has been canceled.

Applicants respectfully submit that these rejections should be withdrawn.

#### ***Claim Rejections – Nonstatutory Obviousness-Type Double Patenting***

Claims 20-31 were provisionally rejected over claims 14-21 of copending Application No. 10/803,114.

Application No.: 10/802341  
Docket No.: UC0361USNA

The terminal disclaimer being filed concurrently with this paper overcomes these rejections. Statement Under 37 C.F.R. § 3.73(b) is also filed concurrently.

*Claim Rejections – 35 U.S.C. § 102 or, in the Alternative, 35 U.S.C. § 103*

(1) Claims 21-26 and 31

Pickup et al.

Claims 21-26 and 31 were rejected under 35 U.S.C. §102 (b) as anticipated by or under 35 U.S.C. §103 (a) as being obvious over Pickup et al. (Journal of New Materials for Electrochemical Systems, 3, pp 21-26, 2000).

Applicants' claims, as recited herein, address a method for making an aqueous dispersion of a polypyrrole and at least one colloid-forming polymeric acid. Pickup et al. describe the formation of conducting polymer/polyanion composites. Applicants submit that the process used by Pickup to form the composites is not the same as Applicants' process. Applicants' process, as recited in Claim 20, as amended, involves combining an oxidizer and a catalyst, in any order, with an aqueous dispersion of a colloid-forming polymeric acid before or after it is combined with an aqueous mixture of water and a pyrrole. Catalysts include ferric sulfate and ferric chloride (see the application at page 9, lines 17-18). In Applicants' example, the mole ratio of  $\text{Fe}^{+3}$  to thiophene monomer is about 0.04; the mole ratio of  $\text{Fe}^{+3}$  to Nafion® is about 0.02. Clearly the  $\text{Fe}^{+3}$  is present as a catalyst. In the syntheses of Pickup,  $\text{Fe}^{+3}$  salts are used as the oxidant, and there is no catalyst. The ratio of  $\text{Fe}^{+3}$  to pyrrole monomer is 10; the ratio of  $\text{Fe}^{+3}$  to Nafion® is 80 (page 22, Table 2). As noted by Pickup, the composites were found to have  $\text{Fe}^{+3}$  associated with the polyanion, presumably due to their strong association, which causes gelation of the Nafion® (page 23, § 3.1, first paragraph). Furthermore, in Applicants' process, the molar amount of colloid-forming polymeric acid is the same as or greater than the amount of pyrrole monomer. The molar ratio of colloid-forming polymeric acid to monomer is in the range of 1-4 (page 13, line 20). In Pickup, the monomer is present in excess, and the polyanion:monomer ratio is 0.125 (page 22, Table 2). Thus, Pickup's synthesis is not the same as Applicants' claimed method.

Furthermore, the synthesis of Pickup et al. results in a different product than Applicants' stable aqueous dispersion. Pickup describes the "PPY/Nafion" composite as a powder (abstract,

Application No.: 10/802341

Docket No.: UC0361USNA

and page 23, § 3.1, first paragraph) or as “very small particles embedded in a gel like-matrix” (page 23, § 3.1, second paragraph). This is not the same as a stable aqueous dispersion, which is the product formed by Applicants’ claimed method.

Accordingly Applicants respectfully submit that this rejection should be withdrawn as overcome or rendered moot by the amendments are remarks.

Ohtani et al.

Claims 21-26 and 31 were rejected under 35 U.S.C. §102 (b) as anticipated by or under 35 U.S.C. §103 (a) as being obvious over Ohtani et al., U.S. Patent 4,869,979.

Ohtani discloses a conducting polymer for use in batteries. Polypyrrole is listed as a possible conducting polymer and “Nafion” is listed as one of many possible polymer anions. However, there is no teaching in Ohtani of a method of making a stable aqueous dispersion of polypyrrole/“Nafion”. Ohtani states at column 3, lines 37-48, that the subject conducting polymer can be formed as described in *Chem. Lett.*, Vol. 1986, 687, and JP-A-59-98165 (equivalent to Cross et al., U.S. Patent 5,378,402). The *Chem. Lett.* article describes only electropolymerization to form the polymer. Cross et al. describe electropolymerization and chemical polymerization, but the only oxidant suggested is ferric ion. In reference example 9 of Ohtani, pyrrole is polymerized in the presence of polvinysulfonic acid using ferric hydroxide as the oxidizer. In this example a black precipitate is formed. Neither Ohtani nor the references cited therein, teaches or suggests the Applicants’ method of forming a stable aqueous dispersion of pyrrole and a colloid-forming polymeric acid, as recited in Claim 20.

Accordingly, Applicants respectfully submit that this rejection should be withdrawn.

(2) Claims 28-30

Claims 28-30 were rejected under 35 U.S.C. §103 (a) as being unpatentable over Pickup et al. or Ohtani et al.

Applicants respectfully submit that Claims 28 and 30 are patentable as depending upon a patentable claim, as discussed above with respect to Claim 20. The Examiner has pointed to EP 593111 as teaching pH treatment. However, this reference does not teach Applicants’ claimed

Application No.: 10/802341  
Docket No.: UC0361USNA

method as described above, and does not overcome the deficiencies of Pickup et al. or Ohtani et al.

Accordingly, Applicants respectfully submit that this rejection should be withdrawn.

***Conclusion***

For all of the foregoing reasons, Applicants respectfully submit that the rejections have been rendered moot or overcome by the foregoing amendments, remarks and terminal disclaimer, and that the pending claims are in condition for allowance. A notice of allowance for all of the currently pending claims is earnestly solicited.

Should the Examiner have questions about the contents of this paper or the status of the applications, he is invited to call the undersigned at the telephone number listed below.

Respectfully submitted,



John H. Lamming  
Attorney for Applicants  
Registration No.: 34,857  
Telephone: (302) 992-5877  
Facsimile: (302) 892-1026

Dated: June 17, 2007